

REMARKS

Reconsideration and allowance of this application are respectfully requested in view of the above amendment and the discussion below.

Applicants' invention concerns a data bus for a plurality of nodes which are connected to opto-electronic transducers by an optical transmission segment. The transducers generates input signals to the star coupler K as electrical signals. The transducers also determine a change in value of an electrical signal and output an electrical signal to the star coupler as an additional electrical signal when there is a deviation of a given magnitude.

As detailed in the specification, one of the problems with data bus connections to star coupler of the type illustrated in U.S. Patent No. 6,587,474 is the degradation of the optical bus system due to aging of the transmitting or bending fatigue of the optical fiber or other damage which can lead to a reduction of output power to the receiver diode.

The present invention determines the degradation of the transmission quality by a transmitter/receiver module S/E which determines any excessive attenuation or a difference between a dark current and a useful current.

Therefore the S/E module functions to convert optical messages from the nodes T_n and T_{n+1} into output signals Di_n and Di_{n+1} as input signals to the logical decision gate 1 of the star coupler K. The output of the gate drives all inputs and the transducers convert these electrical signals from the output of the gate 1 into optical signals to be transmitted to nodes T_n . A dropoff in the optical

transmission quality due to excessive attenuation or the difference between the dark current and the photocurrent is detected by the transmit/receive module S/E. Thus the S/E module determines whether there is excessive attenuation by comparing the signal to an acceptable level of attenuation i.e. in a range of normal operation. If that level of attenuation is exceeded then there is an error signal. According to the present invention this error signal is sent out as an additional electrical signal when there is a low level of the optical data input of the module. In other words when there is a low level input they should be no output so that any output which is detected during this period of low level optical input is a brief low impulse signal which represents an error to be stored in buffer 7 and counted in counter 8 or incremented. The counters are read out and reset by serial interface SPI of a microcontroller.

In response to the objections of the drawings, Applicants' are attaching hereto a proposed mark-up for the Figure which labels the star coupler and labels the microcontroller as well as the serial interface SPI.

Claim 7 has been rejected under 35 U.S.C. 112, first paragraph with respect to the term "relative value". In response to this rejection Applicants' have cancelled the term "relative" from claim 7 so that it is now clear that the method involves determining the value of the output signal and comparing that value to a base value and output an error signal if that value is less than a base value. As explained above this base value is a range outside of normal operation when there is no degradation of the optical transmission segment. Therefore

when the measured value does not fall not within the acceptable range "base value", an error signal is output.

Claim 6 been rejected under 35 U.S.C. 112 with respect to "second means" as well as the "relative value".

In response to this rejection Applicant's have amended claim 6 so that it is clear that the opto-electronic transducer functions to generate a first electrical output signal in the response to an optical input signal and determine the value of said first electrical output signal and output a second electrical signal as an error signal when the value of said first electrical signal is less than a predetermined value during the time at which those in absence of an optical input signal from the node. The term "relative" has been eliminated.

Claim 7 has also been rejected under the second paragraph of 35 C.F.R. 112. Applicants' have, as indicated above, eliminated the term "relative" to also address the second paragraph rejection under 35 U.S.C. 112.

Claim 6 and 7 have been rejected under 35 U.S.C. 102 as anticipated by U.S. Patent No. 5,859,716 which rejection is based on the claims 6 and 7 "as far as understood". Likewise claim 6-10 have been rejected under 35 U.S.C. 102 as anticipated by U.S. Patent No. 5,617,238 to Bogdan and claim 6-8 have been rejected under 35 U.S.C. 102 as anticipated by Miyamori. Claims 6-10 have also been rejected under 35 U.S.C. 102 as unpatentable over Neff U.S. Patent No. 5,541,759. Lastly, claims 8-10 have been rejected under 35 U.S.C. 103 as

unpatentable over O'Sullivan in view of U.S. Patent No. 5,418,785 or U.S. Patent No. 4,731,880.

Applicants' respectfully submit that each of independent claims 6 and 7 provide either structure or method limitations which are not available from the references or any combination of the references.

The reference to O'Sullivan '716 concerns a troubleshooting system which modifies an outgoing signal with a local code and detects the local code in the incoming signal by comparing the energy of the transmitted and received modifications.

There is no disclosure in O'Sullivan of the generation of an error signal during the time when there is an absence of an input signal from a node. Additionally, there is no disclosure that the opto-electronic transducer 33 of O'Sullivan provides an error signal in any form.

The reference to Bogdan et al. U.S. Patent No. 5,617,238 measures distortion of electro-optic modules 20 but has no indication of a generation of an error signal during a period of time when there is an absence of an input optical signal from a node and there is no indication that any errors are generated from the opto-electronic transducer.

The reference to Asahina U.S. Patent No. 6,259,704 concerns a transmission line connecting a plurality of terminals wherein signals are transmitted by timeshare multiplexing in one direction. A timing device retransmits a signal so that the delay time is corrected to the delay time of one

frame caused by the transmission line. There is no showing in Asahina of the opto-electronic transducer determining a value of the first electrical output signal and generating a second signal as an error signal during a period of time when there is an absence of an input optical signal from the node. There is no indication of a node or its operation and no indication of the claimed generation of an error signal during the absence of an input optical signal.

The reference to Miyamori concerns a digital audio recorder and a transmission device which transmits audio signals with infrared rays. The resetting of the counters 91 and 92 referred to by the Examiner in Figure 17 and lines 57-61 of the '946 reference provides a measurement of the difference between the two counters in order to judge whether there is a normal transmission channel clock. There is no indication of Applicants' claimed invention with respect to connecting together a plurality of nodes in each of opto-electronic transducer and generating a second signal whenever a first signal is less than a predetermined value during a period of time when there is an absence of input signal from a node.

The reference to Neff et al. U.S. Patent No. 5,541,759 concerns a signal fiber network with a pulse width compensation circuit which reconstructs each data pulse from the leading edge of the pulse in order to limit degradation of the signal. A phase locked loop is used to limit jitter by bringing a pulse closer to the phase of the local clock. A detector detects a decrease in the received amplitude of serial data. There is no indication of an opto-electronic transducer which

outputs an error signal in response to the measurement of the first electrical signal during a period time when there is an absence of an input optical signal from a node.

The secondary reference to Olshansky and Ault et al. adds nothing toward meeting the claim limitations of independent claim 7 from which dependent claims 8-10 depend from and contain all of the limitations thereof.

Therefore in view of the changes to the claim structure to obviate the rejections under 35 U.S.C. 112 and in view of the restructuring of independent claims 6 and 7 to more precisely define subject matter not shown or disclosed by the references, Applicants' respectfully request that this application containing claims 6-10 be allowed and be passed to issue.

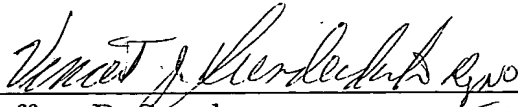
If there are any questions regarding this amendment or the application in general, a telephone call to the undersigned would be appreciated since this should expedite the prosecution of the application for all concerned.

Serial No. 09/623,895
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If necessary to effect a timely response, this paper should be considered as a petition for an Extension of Time sufficient to effect a timely response, and please charge any deficiency in fees or credit any overpayments to Deposit Account No. 05-1323 (Docket #080437.49163US).

Respectfully submitted,

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